



## COURSE SYLLABUS

# Work-Human-Technology, 7.5 credits

*Arbete-Människa-Teknik, 7,5 högskolepoäng*

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|----------------------|-----------------------------------|-----------------------------|--|
| <b>Course Code:</b>  | TAMK19                            | <b>Education Cycle:</b>     | First-cycle level                          |
| <b>Confirmed by:</b> | Dean Jun 1, 2019                  | <b>Disciplinary domain:</b> | Technology (75%) and social sciences (25%) |
| <b>Revised by:</b>   | Director of Education Nov 5, 2021 | <b>Subject group:</b>       | IE1  |
| <b>Valid From:</b>   | Jan 1, 2022                       | <b>Specialised in:</b>      | G1F  |
| <b>Version:</b>      | 2                                 | <b>Main field of study:</b> | Industrial Engineering and Management      |

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### Intended Learning Outcomes (ILO)

On completion of the course, the student should

Knowledge and understanding

- Demonstrate knowledge and understanding of the area human-technology-organization and its role in industrial operations, including the knowledge about basic concepts, methods and models, as well as awareness of current research issues
- Demonstrate knowledge and understanding of the individual at work, how various aspects of work are interrelated and human capabilities in work from a system perspective as well as legislation in occupational health

Skills and abilities

- Demonstrate the ability to design, manage and develop industrial activities by assessing job designs based on diverse human capabilities
- Demonstrate the ability to identify, formulate, analyze and critically discuss relevant problems in the field of human-technology-organization
- Demonstrate the ability to search, collect, evaluate and critically interpret information regarding relevant problems in the field of human-technology-organization
- Demonstrate the ability to independently plan and conduct investigations and propose solutions in the field of human-technology-organization

Judgement and approach

- Demonstrate the ability to propose and compare different options for the design, management and development of industrial operations with a focus on job design and assess their implications and risks
- Demonstrate an insight in relevant social and ethical issues, with a focus on socially sustainable development of work

### Contents

The course provides knowledge and understanding of how industrial systems can be designed

according to human natural strengths and limitations to result in high performance and sustainable production. This also implies deepened knowledge of the interaction and interplay between humans at work and the surrounding technology and organization.

The course includes the following topics:

- Human capabilities for work and job design: physiological work load, physical work environment aspects, cognition, work organization, stress, shift work.
- Socio-technical systems: theoretical foundations, systems, models and applications.
- Workplace design and impact of complexity.
- Design of automation, allocation of functions and man - machine system interfaces.
- Workplace assessment.
- Swedish and EU occupational health and safety legislation.

### **Type of instruction**

Lectures, exercises, laboratories, seminars, and project work.

The teaching is conducted in English.

### **Prerequisites**

General entry requirements and completed course Quality Management and Engineering, 7,5 credits (or the equivalent).

### **Examination and grades**

The course is graded 5,4,3 or Fail.

The final grade for the course is based upon a balanced set of assessments. The final grade will only be issued after satisfactory completion of all assessments.

Registration of examination:

| Name of the Test             | Value       | Grading |
|------------------------------|-------------|---------|
| Examination                  | 3 credits   | 5/4/3/U |
| Seminars and Laboratory work | 1.5 credits | U/G     |
| Project work                 | 3 credits   | 5/4/3/U |

### **Course literature**

The literature list for the course will be provided 8 weeks before the course starts.

Title: Production Ergonomics: Designing Work Systems to Support Optimal Human Performance

Author: Cecilia Berlin, Caroline Adams

It can be bought as print from this homepage, <https://www.waterstones.com/book/9781911529125>,

or downloaded for free here, <https://www.ubiquitypress.com/site/books/10.5334/bbe/>.